

TERAHERTZ PHASE SHIFTER OR RETARDER BASED ON MAGNETICALLY CONTROLLED BIREFRINGENCE IN LIQUID CRYSTALS

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Abstract

The present invention enables a means of continuously shifting the phase of electromagnetic waves in the THz (0.1 to 10 THz, 1 THz = 10^{12} Hz) or sub-millimeter wave range. It is based on magnetically controlled birefringence of liquid crystals. The device consists of an assembly of a liquid crystal cell and rotatable magnets. By varying the angle of the magnet with respect to the incident THz wave, desired phase shift or delay can be achieved. To increase the amount of phase shift, the device employs multiple liquid crystal cells in a compact sandwich structure.

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